

REMARKS

Reconsideration of the above referenced application in view of the following remarks is requested. Claims 1, 2, 4, 6, 16, 17, 19, 20, 21, 23, and 30 have been amended. Claims 3, 9, and 18 have been cancelled. Existing claims 1, 2, 4-8, 10-17, and 19-30, as amended, remain in the application.

ARGUMENT

Claim Rejections – 35 U.S.C. § 102

Claims 23-30 are rejected under 35 U.S.C. § 102(b) as being anticipated by Levy et al. (U.S. Patent No. 6,092,175) (hereinafter Levy).

When rejecting independent claim 23, the Examiner basically asserted that the rename register region in Levy is the same as or equivalent to the freelist of registers recited in this claim. Applicants respectfully disagree. The difference between a freelist and rename registers is explained clearly in the background section of the specification (see paragraphs [0002] to [0004] of the specification of the present application). In fact, Levy itself distinguishes the free list and renaming registers (see renaming registers 68 and free register list 70 in Fig. 4, col. 9, lines 22-32 of Levy). Because renaming registers and the freelist of registers are not the same or equivalent to each other, Levy's disclosure of segmenting/undividing rename register region does not teach or suggest the limitation of dividing/undividing the freelist of registers, as recited in claim 23. Thus, Levy does not anticipate claim 23. Accordingly, Levy does not anticipated all of the claims that depend from claim 23 (i.e., claims 24-30). Therefore, Applicants

respectfully request that the 35 U.S.C. § 102(b) rejections of claims 23-30 based on Levy be withdrawn.

Claim Rejections – 35 U.S.C. § 103

Claims 1-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Levy in view of Leibholz (U.S. Patent No. 6, 954,846) (hereinafter Leibholz).

Independent claim 1 has been amended to incorporate limitations recited in original claim 3. Levy was the sole reference cited by the Examiner to reject the limitations in original claim 3. As presented above in traversing the 35 U.S.C. 102 rejections of claims 23-30, the rename registers in Levy are not the same as or equivalent to a list of physical registers within the physical register file that are not allocated to a logical register registers (basically a freelist as used in claim 23) recited in claim 1. Thus, Levy does not teach or suggest those limitations recited in original claim 3 and now in claim 1. Leibholz was not cited to cure those deficiencies of Levy. Thus, the combination of Levy and Leibholz does not make claim 1 unpatentable.

Applicants hereby would like to point out the differences between Levy and the claims in the present application in general. One of main differences between Levy and the present invention is that present invention achieves register sharing through the freelist. When in a single thread (ST) mode, all physical registers in the freelist are assigned to the single thread. When the processor transitions from the ST mode to a MT mode, the freelist is partitioned equally for each thread and those physical registers that have already allocated before the transition are not affected. When the processor transitions from the MT mode to the ST mode, the freelist is merged into one but part of

the physical registers are still reserved for other threads to use when the processor transitions from the ST to the MT mode again. As shown in Fig. 4 of Levy, there are a freelist 70 and renaming registers 68. Rather than reallocating the freelist, Levy chooses to re-use the renaming registers. The approach disclosed in the present application is simpler and easier to implement but still achieve the sharing result. The approach simply reallocates the free list. As pointed in the background section of the present application, Levy's approach is more like a shared free list approach which requires more hardware such as re-order buffer (as shown as 63 of Fig. 3 of Levy). Independent claims 8 and 16 include limitations similar to those in claim 1. For the forgoing reasons, claims 8 and 16 are patentable over Levy in view of Leibholz. Accordingly, all of the claims that depend therefrom are also patentable. Thus, Applicants respectfully request that the 35 U.S.C. § 103(a) rejections of claims 1-22 be withdrawn.

CONCLUSION

Based on the foregoing, it is submitted that that all active claims are presently in condition for allowance, and their passage to issuance is respectfully solicited. If the Examiner has any questions, the Examiner is invited to contact the undersigned at (503) 264-1700. Entry of this amendment is respectfully requested.

Respectfully submitted,

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